CLAIMS

What is claimed is:

1. A method of purifying red blood cells, comprising the steps;
   a) separating whole blood, whereby a red blood cell fraction and a liquid fraction are formed; and
   b) diafiltering the red blood cell fraction to thereby form purified red blood cells.

2. The method of Claim 1, wherein the whole blood is separated by sedimentation of red blood cells in the whole blood.

3. The method of Claim 2, wherein the sedimentation of red blood cells is obtained by centrifuging the whole blood.

4. The method of Claim 3, wherein the centrifugation of the whole blood causes the red blood cell fraction to consist essentially of red blood cells.

5. The method of Claim 1, wherein the whole blood is fractionated by exposing the whole blood to a G-force in a range of between about 10 x G and about 12,000 x G.

6. The method of Claim 1, wherein the liquid fraction is removed from the from the red blood cell fraction by decanting after step a).

7. The method of Claim 1, wherein the liquid fraction is removed from the red blood cell fraction simultaneously with separation of the liquid fraction and the red blood cell fraction.

8. The method of Claim 1, wherein the whole blood is defibrinated.

9. The method of Claim 8, wherein the whole blood is defibrinated mechanically.

10. The method of Claim 1, wherein the whole blood is treated with an anticoagulant.

11. The method of Claim 10, wherein the anticoagulant is selected from the group consisting of: sodium citrate, heparin, ethylenediaminetetraacetic acid (EDTA) and sodium oxylate.

12. The method of Claim 11, wherein the anticoagulant is sodium citrate.

13. The method of Claim 11, wherein the anticoagulant is heparin.

14. The method of Claim 1, further including the step of lysing the purified red blood cells.

15. The method of Claim 14, wherein the purified red blood cells are lysed mechanically.

16. The method of Claim 14, wherein the purified red blood cells are lysed osmotically.

17. The method of Claim 1, wherein the liquid fraction includes most of red cells of the whole blood.

18. The method of Claim 17, wherein the red blood cell fraction includes most of the white cells and platelets of the whole blood.

19. The method of Claim 1, wherein the red blood cell fraction is diafiltered with a membrane having a permeability in a range of between about 0.1 μm and about 5 μm.

20. The method of Claim 1, wherein the whole blood is bovine whole blood.

21. A method of forming a lysate of purified red blood cells for use in a hemoglobin blood substitute, comprising the steps;

  a) separating whole blood, whereby a red blood cell fraction and a liquid fraction are formed;

  b) diafiltering the red blood cell fraction to thereby form purified red blood cells; and

  c) lysing the purified red blood cells, thereby forming the lysate of purified red blood cells.

22. The method of Claim 21, wherein the whole blood is mechanically defibrinated.

23. The method of Claim 21, wherein the whole blood is treated with an anticoagulant selected from the group consisting of: sodium citrate, heparin, ethylenediaminetetraacetic acid (EDTA) and sodium oxylate.

24. The method of Claim 21, wherein the whole blood is fractionated by centrifuging the whole blood.

25. The method of Claim 21, wherein the purified red blood cells are lysed mechanically.

26. The method of Claim 21, wherein the whole blood is bovine whole blood.

27. A method of forming a lysate of purified red blood cells for use in a hemoglobin blood substitute, comprising the steps;

a) separating defibrinated whole bovine blood by centrifugation, whereby a red blood cell fraction and a liquid fraction are formed;

b) diafiltering the red blood cell fraction to thereby form purified red blood cells; and

c) mechanically lysing the purified red blood cells, thereby forming the lysate of purified red blood cells.